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PROJECT
1526800-137

PLANNING DOCUMENTS
VOLUME II OF III
HEALTH AND SAFETY PLAN
FINAL

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

**BELOIT CORPORATION
ROCKTON FACILITY
ROCKTON, ILLINOIS**

JUNE 1992

COPY

PREPARED FOR:
BELOIT CORPORATION
ROCKTON, ILLINOIS

...
PREPARED BY:
WARZYN INC.
MADISON, WISCONSIN

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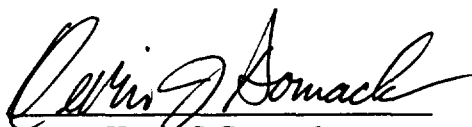
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WARZYN INC.
MADISON, WISCONSIN



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This Site Health and Safety Plan does not supersede or in any way relieve any contractor of their obligations under any applicable OSHA regulations including, but not limited to, 29 CFR 1910: Occupational Safety and Health Standards and 29 CFR 1926: Health and Safety Regulations for Construction.

Warzyn personnel working at this site meet the training and medical monitoring requirements of 29 CFR 1910.120: Hazardous Waste Operations and Emergency Response. Documentation of this training and medical surveillance can be obtained upon written request to Warzyn Inc., Corporate Health and Safety Manager, Addison, Illinois.

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INTRODUCTION

SITE DESCRIPTION

The site is located near the Village of Rockton in Winnebago County, Illinois, in the northern half of Section 13 and the southeast quadrant of Section 12, Township 46 North, Range 1 East. The site is bordered to the west by the Rock River; to the north by Prairie Hill Road; to the east by Blackhawk Blvd.; and to the south by a line projected from Blackhawk Blvd. to the Rock River along an east-west access road that lies between Blackhawk Blvd. and the Rock River. The site can generally be divided into two components, the Beloit Corporation property and the Blackhawk Acres Subdivision.

The Beloit Corporation, a subsidiary of Harnischfeger Industries, is a manufacturer of machines that produce layered paper products from paper pulp. The Beloit Corporation manufacturing plant is located at 1165 Prairie Hill Road in Rockton, Illinois. In addition to the manufacturing plant, a Research and Development Center (R&D Center) is located on Beloit Corporation property. The R&D Center designs and demonstrates paper-making machines. The property upon which the facility is located was farmland prior to ownership by the Beloit Corporation in 1957.

There are several structures located on Beloit Corporation property. Two wastewater treatment ponds and two clarifier tanks are located on the northernmost portion of the property. The R&D Center (H 40,000 sq ft) is located immediately southeast of the wastewater facility. The Beloit Corporation Plant (H 230,000 sq ft) is southwest of the R&D Center. Large open storage areas exist on the northeast and southwest sides of the plant. These storage areas are partially paved with asphalt. Also, asphalt parking lots exist between the plant and the R&D Center, and between the plant and Watts Avenue. A foundry sand disposal area is located west of the plant and a fibrous sludge spreading area is located southwest of the plant. A line of trees exist along the bank of the Rock River on Beloit Corporation property. The gravel pit, owned by Beloit Corporation, is separated from the main Beloit Corporation property by a company driveway and railroad tracks.

Additional structures identified within the site boundary are the homes and roadways that make-up the Blackhawk Acres Subdivision, and buildings and paved areas at Safe-T-Way and Soterion/United Recovery.

SITE HISTORY

The investigation of the site by the IEPA and U.S. EPA developed from the investigations of complaints against United Recovery in 1980. Subsequent investigations led to a groundwater quality study of the entire area in the vicinity of the former United Recovery and Beloit Corporation properties.

The former United Recovery facility was an industrial waste processing plant located at 900 Watts Avenue. The facility reclaims high speed drill cuttings and cooling oil. Complaints of poor waste handling practices and detections of elevated levels of volatile organic compounds (VOCs) in many of the homes located on Watts Avenue near the former United Recovery facility prompted the IEPA to investigate the former United Recovery facility on several occasions from 1980 through 1982. During their inspections of the facility, the IEPA documented releases of waste oils on the facility grounds, in the septic system, and in the dry well located on the United Recovery property. Water quality samples taken by the IEPA in 1981 and 1982 from the former United Recovery facility indicated the presence of elevated levels of metals, BOD, and COD in the septic system.

During October 1981, Beloit Corporation applied sludge from their wastewater treatment lagoons to approximately 10 acres of land at the southwest end of the Beloit Corporation property. A chemical analysis of the sludge indicated elevated concentrations for chloroform (50 to 354 ug/L) and trans-1,2-dichloroethene (<35 to 363 ug/L).

On March 2, 1983, the IEPA collected two samples from the bottom of one of the cells of Beloit Corporation's three-celled wastewater treatment impoundment. VOCs were detected in the analysis. Additional wastewater samples were collected in 1983 and 1984 by both the Beloit Corporation and the IEPA. These samples also contained concentrations of VOCs in the parts per billion (ppb) range.

In May 1983, Beloit Corporation collected a sample of wastewater from the R&D Center before it entered the wastewater treatment lagoons. The analysis indicated a concentration of 6.3 ug/L tetrachloroethene.

In October 1983, groundwater monitoring wells W1, W2, and W3 were installed on Beloit Corporation property to comply with an IEPA permit requirement.

Since 1984, semi-annual VOC sampling has been required at these wells. The following VOCs were detected: trichloroethene (6 to 142 ug/L), 1,1,1-trichloroethane (5 to 512 ug/L), tetrachloroethene (6 to 18 ug/L), and 1,1-dichloroethane (trace to 18 ug/L).

In January 1984, 17 private water supply wells were sampled for VOCs. Concentrations of VOCs detected in the wells ranged from < 1 to 175 ug/L. The VOCs detected included: 1,1,1-trichloroethane; trichloroethene; 1,1-dichloroethene; 1,1-dichloroethane; trans-1,2-dichloroethene; and tetrachloroethene.

In October 1985, five 55-gallon drums were discovered near well MW6. The material had a paint-like odor and contained low levels of barium and cadmium, as well as several VOCs.

From 1984 through 1989, Warzyn was contracted to assess groundwater quality at the site. Numerous soil borings and monitoring wells were installed and sampled during this period.

During July 1987, the three-celled wastewater treatment impoundment operated by Beloit Corporation was taken off-line. A new wastewater treatment system was constructed in October 1988.

On June 24, 1988, the site was proposed for inclusion on the Superfund National Priorities List (NPL). On August 30, 1990, the site was officially entered on the NPL.

TOPOGRAPHY AND DRAINAGE

The site is located on the broad (approximately 8-mile wide), relatively flat, Rock River/Pecatonica River alluvial valley. Surface elevations range from approximately 900 ft mean sea level (MSL) on the broad gently rolling uplands, to slightly less than 720 ft MSL, where the floor of the Rock River/Pecatonica River alluvial valley meets the southerly flowing Rock River and the easterly flowing Pecatonica River. Upland topography is primarily controlled by erosion and bedrock topography. The Rock River/Pecatonica River alluvial valley topography is primarily controlled by post glacial fluvial erosional and depositional processes.

The rolling topography on the uplands directs runoff toward the Rock and Pecatonica Rivers which are responsible for draining this area and which are the only substantial surface water features in the vicinity. The southeastern portion of the site is situated above the 100-year flood plain on well-drained, highly

permeable sands and gravels; whereas the northwestern portion of the site is situated below the 100-year flood plain on poorly-drained sands, silts and clays. As a result, surface water drainage in the vicinity of the site is generally poorly developed.

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SCOPE OF WORK

ELECTROMAGNETIC/MAGNETOMETER SURVEY

Information collected during previous investigations conducted by Beloit Corporation and information provided by the IEPA indicated the possible existence of an underground storage tank at 1314 Watts Avenue in the Blackhawk Acres Subdivision and at the Soterion property, respectively. An electromagnetic (EM)/magnetometer survey will be conducted at 1314 Watts Avenue and the Soterion property to determine the presence and location of underground storage tanks and/or buried metal drums, if any.

SOIL GAS SURVEY

A soil gas survey will be conducted over the majority of the site and will be concentrated more specifically at potential source locations. If a potential source is identified during the initial round of soil gas sampling, a more concentrated grid of soil gas samples may be selected by the field crew around the suspect area for an additional sampling round. Soil gas samples will be analyzed in the field using a portable GC unit.

SHALLOW SOIL BORINGS AND SOIL SAMPLING

Shallow soil borings will be performed in potential contaminant source areas identified during the soil gas survey and previous investigations. Additional borings may be selected based on the results of the surface geophysical and soil gas surveys. The purpose of these soil borings is to collect soil samples in potentially contaminated areas. Each sample will be screened in the field for indications of VOCs with direct reading organic vapor monitor (OVM) using the field headspace method. Based on the OVM results, soil samples from each boring location will be selected for laboratory analysis.

SURFACE SOIL SAMPLING

Surface soil samples will be obtained from the locations chosen for the shallow soil borings. The samples will be collected from the upper 6 in. of soil and will be submitted for laboratory analysis. One background surface soil sample will be collected for laboratory analysis. The sample location will be selected in the field.

MONITORING WELL INSTALLATION AND SOIL SAMPLING

The objective for conducting borings at the site is to further characterize site hydrogeology and to screen for groundwater contamination while drilling by obtaining groundwater samples for GC analysis. The objective for installing additional groundwater monitoring wells is to obtain aquifer hydraulic and water level data to determine aquifer properties, and the groundwater flow direction. Groundwater quality data will also be collected to evaluate for the presence or absence of groundwater contamination. Twenty-two borings will be drilled at 14 locations to evaluate site-specific subsurface stratigraphy and groundwater quality, and to ground-truth the natural gamma logger, and for installation of 16 groundwater monitoring wells.

WELL DEVELOPMENT

Each well will be developed after installation by first surging the well with a bailer and then removing at least ten casing volumes of water using a bailer or pump.

BOREHOLE GEOPHYSICAL INVESTIGATION

A down-hole natural gamma ray logging tool will be used on selected existing and new monitoring wells to differentiate and identify soil stratigraphic units and variations in the clay content in the soil matrix. This natural gamma logging tool will be ground-truthed in geotechnical boring GB1.

INSPECTION OF EXISTING MONITORING WELLS

Existing monitoring wells will be inspected to determine whether they are functional. Total well depth will be measured and compared to the originally reported well depth. Surface well seals will be observed for integrity. Wells will be redeveloped, if necessary, to provide representative water level measurements. Functional wells will be included in the water level measurement task and certain wells constructed of stainless steel may be included in groundwater quality sampling activities. Wells which are determined to be non-functional will be abandoned in accordance with IEPA's guidance document, "Monitor Well Plugging Procedures."

MONITORING WELL AND STANDPIPE ABANDONMENT

Four existing monitoring wells and seven existing standpipes will be abandoned during Phase 1 of the RI. They will be abandoned in accordance with IEPA's

guidance document, "Monitor Well Plugging Procedures." This method does not require the use of any drilling equipment.

GROUNDWATER LEVEL MEASUREMENTS

Groundwater level measurements will be made at existing and new wells at least four times during the migration pathway assessment and on a bi-monthly basis for a period of one year. The number of measurement periods may be reduced or discontinued if review of data collected during the migration pathway assessment suggests temporal water level variations are minimal. Groundwater level measurements will also be taken during each groundwater sampling event. Surface water measurements will also be taken at staff gauges located along the Rock River during each measurement event. Existing functional wells for which construction details exist will be included in the water level surveys.

HYDRAULIC CONDUCTIVITY TESTING

Hydraulic conductivity testing of the new monitoring wells and selected existing wells will be performed. In-situ single well hydraulic conductivity tests will be performed to assess hydraulic conductivity and groundwater flow rates. Baildown tests will be performed on water table wells and piezometers.

LOCATION AND ELEVATION SURVEY

A location and elevation survey will be performed to locate soil borings, monitoring wells, and other sampling locations.

GROUNDWATER QUALITY CHARACTERIZATION

Groundwater quality characterization will be conducted to evaluate the magnitude and extent of groundwater contamination in the vicinity of the site. Two rounds of groundwater samples will be collected. Round 1 (Phase 1) will consist of sampling the 16 monitoring wells installed during Phase 1 and the 14 existing monitoring wells constructed of stainless steel.

Results of Round 1 will be used to determine contaminants of concern. Round 2 (Phase 2) sampling will consist of sampling wells and analyzing samples for indicator parameters and contaminants of concern identified during Round 1.

SURFACE WATER AND SEDIMENT INVESTIGATION

A surface water and sediment investigation will be performed in order to determine surface water drainage patterns on and about the site and water level fluctuations in the Rock River. A scientist/engineer will visually locate, identify, and map drainage patterns at the site. Surface water level measurements will be collected at staff gauge locations.

ECOLOGICAL ASSESSMENT

A preliminary ecological assessment of the site and adjacent areas will be performed by the IEPA to evaluate ecological resources. A qualitative preliminary ecological assessment will also be developed to evaluate potential contamination during site chemicals detected during RI sampling activities.

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SITE HAZARDS

SITE CHEMICAL HAZARDS

The primary hazards at the site are volatile organic compounds (VOCs). A summary of VOCs present at the site, their concentrations and locations are found in Table 1.

The primary routes of possible exposure to the VOCs present on site are either direct dermal contact with contaminated soils and water, or inhalation of volatile organic vapors.

Protection from VOCs present at the site may require respiratory protection. Standard hazardous-waste-site protocol requires adequate respiratory protection to be worn in areas where workers' breathing zone concentrations of VOCs are elevated above background level. There is no existing data on airborne contaminants at this site.

Direct contact with contaminated soil and water is to be avoided. If contact is necessary to perform work, the proper protective clothing, as stated in Section 4, must be worn. In areas where field activities create dust, personnel are to wear full face piece respirators with cartridges designed for protection against dusts and mists. Tables 2 and 3 give physical and chemical characteristics for contaminants found at the site.

SITE PHYSICAL HAZARDS

1. Weather Considerations - Working in hot or cold weather requires special health and safety considerations. Appendix A to this plan, Health and Safety Standard Operation Procedure - Temperature Stress, describes symptoms of temperature stress and responses for emergencies due to heat or cold exposure.
2. Use of Heavy Equipment - Activity around, and use of, heavy equipment presents hazards to personnel on site. Personnel must engage in standard safe operating procedures when operating drill rigs, earth movers, and other heavy equipment. Only personnel actively involved in associated operations are to be in the vicinity of heavy equipment. Use caution

when working around heavy equipment. Hard hats, safety glasses with side shields, and steel-toed boots are to be worn within a 50-ft radius of heavy equipment. Hearing protection should be worn as necessary around operating heavy equipment. Generally, if you cannot speak in a normal conversational level and be heard 3 ft away, hearing protection is required. The work area must be controlled to prevent unauthorized personnel from entering.

3. Power Lines and Utilities - Activity around overhead power lines or buried utilities presents hazards to personnel on site. There must be at least 15 ft clearance when working under overhead power lines with heavy equipment. As a general rule, the minimum lateral distance to overhead power lines from heavy equipment is to be 15 ft or a distance equivalent to the height of the equipment, whichever is greater. All buried utilities must be cleared before proceeding with intrusive activities.

SECTION 3
CHEMICAL HAZARD INFORMATION

TABLE 1
Site Chemical Hazards

<u>Chemical</u>	<u>Maximum Concentration</u>	<u>Location</u>
trichloroethene	92.3 ug/L	W18
trans-1,2-dichloroethene	363 ug/kg	Sludge Stock Piles
1,1,1-trichloroethane	233 ug/kg	B4
1,1-dichloroethane	505 ug/kg	B4-2.5 ft
1,1-dichloroethene	17 ug/L	910 Watts Ave.
methylene chloride	2060 ug/kg	B5-7.5 ft
chloroform	354 ug/kg	Sludge Stock Piles
toluene	311 ug/kg	B5-7.5 ft
xylenes	416 ug/kg	B5-7.5 ft
ethylbenzene	95.4 ug/kg	B5-7.5 ft
tetrachloroethene	300 ug/L	910 Watts Ave.
bromoform	1 ug/L	910 Watts Ave.
benzene	84.7 ug/kg	B5-7.5 ft
acetone	34,000 ug/L	G103D

SECTION 3 CHEMICAL HAZARD INFORMATION

TABLE 2 Chemical Properties

<u>Name</u>	<u>Molecular Weight</u>	<u>Specific Gravity</u>	<u>Flash Point</u>	<u>Flam. Limits</u>	<u>Vapor Press.</u>	<u>Vapor Density</u>	<u>Ionization Potential</u>	<u>Solubility</u>
ethylbenzene	106	0.863	<-4°F	6.7-11.3%	375 mm	NA	10.29 eV	0.9%
xylene	106	0.088	81-90°F	1-7%	9 mm	NA	8.56 eV	0.00003%
toluene	92	0.867	40°F	1.3-7.1%	22 mm	NA	8.82 eV	0.05%
acetone	58	0.791	1.4°F	2.6-12.8%	266 mm	2.0	9.69 eV	miscible
trans-1,2-dichloroethene	99	1.253	55°F	6.2-16%	62 mm	3.4	9.66 eV	0.8%
trichloroethene	131	1.46	None	11-41%	58 mm	4.5	9.47 eV	0.1%
tetrachloroethene	166	1.62	None	----	14 mm	NA	9.32 eV	0.015%
1,1-dichloroethene	97	1.21	0°F	7.3-16%	665 mm	3.3	NA	0.5%
methylene chloride	85	1.322	None	12%-19%	350 mm	2.9	11.35 eV	1.3%
benzene	78	0.879	12°F	1.3-7.1%	75 mm	2.7	9.25 eV	0.8%
1,1,1-trichloroethane	133	1.35	NA	7-16%	100 mm	4.6	11.25 eV	0.07%
1,1-dichloroethane	99	1.17	17°F	6-16%	182 mm	3.4	11.06 eV	<0.1%
chloroform	119	1.49	NA	NA	160 mm	4.12	11.37 eV	0.8%
bromoform	253	2.89	NA	NA	5 mm	8.7	10.48 eV	0.1%

SECTION 3 CHEMICAL HAZARD INFORMATION

TABLE 3 Health Properties

<u>Name</u>	<u>Odor Characteristic</u>	<u>Odor Threshold (PPM)</u>	<u>TLV (PPM)</u>	<u>IDLH (PPM)</u>	<u>Dermal Toxicity</u>
ethylbenzene	pungent, aromatic	0.25-200	100	2,000	moderate
xylene	hydrocarbon	0.05-200	100	10,000	NA
toluene	benzene-like	0.17-40	100	2,000	slight
acetone	mint-like	100	750	20,000	moderate
trans-1,2-dichloroethene	chlorinated hydrocarbons	6.2-100	200	1,000	NA
trichloroethene	sweet	21.4-400	50	1,000	moderate
tetrachloroethene	sweet	4.68-50	50(1)	500	NA
1,1-dichloroethene	sweet	0.085-500	5(2)	4,000	NA
methylene chloride	sweet	25-320	50	5,000	moderate
benzene	hydrocarbon-like	4.68	10(3)	2,000	extreme
1,1,1-trichloroethane	chloroform-like	100	350	1000	slight
1,1-dichloroethane	chloroform-like	NA	200 ⁽⁴⁾	4000	NA
chloroform	sweet	205-307	10 ⁽⁵⁾	1000	NA
bromoform	chloroform-like	NA	0.5*	NA	NA

NOTE: organic vapor cartridges are approved for use with all solvents except methylene chloride.

- (1) PEL for Tetrachloroethene is 25 PPM
- (2) PEL for 1,1-Dichloroethene is 1 PPM
- (3) PEL for Benzene is 1 PPM
- (4) PEL for 1,1-dichloroethane is 100 PPM
- (5) PEL for chloroform is 2 PPM

NA - Not Available
* skin exposure limit

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PERSONNEL PROTECTION EQUIPMENT REQUIREMENTS

Personnel performing duties on site must abide by the appropriate ensemble of personal protective equipment, unless performing oversight duties from upwind support areas. Changes in levels of protection may be initiated by the site Safety Officer (SSO), but downgrades in level of protection must involve consultation with the Health and Safety Coordinator (HSC).

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Level D

Level D is to be worn during activities which do not suggest any initial respiratory or dermal health hazards. The following list outlines the personal protective equipment to be utilized for Level D:

Required PPE:

- Steel-toe/steel-shank work boots or steel-toe/steel-shank neoprene boots
- Work uniform

Optional PPE - Use as needed:

- Eye protection (safety glasses and side shields, with or without faceshield)
- Hard hat
- Hearing protection

Level D - Modified

Level D - Modified is to be worn during activities which do not suggest any initial respiratory hazards, but where dermal protection is warranted. The following outlines this level of protection:

Required PPE:

- Steel-toe/steel-shank work boots with Saranex-coated inner overboots and latex outer overboots or steel-toe/steel-shank neoprene boots
- Polyethylene coated Tyvek coveralls
- Nitrile or neoprene outer gloves
- Vinyl inner gloves

Optional PPE - Use as needed:

- Hard hat
- Eye protection (safety glasses and side shields, with or without faceshield)
- Hearing protection

Level C

Level C is to be worn when breathing zone organic vapor air contamination is between background and 5 ppm (according to OVM readings) or when work activities generate dust. The following outlines this level of protection:

Required PPE:

- Steel-toe/steel-shank work boots with Saranex-coated inner overboots and latex outer overboots or steel-toe/steel-shank neoprene boots
- Polyethylene coated Tyvek coveralls
- Nitrile or neoprene outer gloves
- Vinyl inner gloves
- Full-facepiece air-purifying respirator
- GMC-H respirator cartridges

Optional PPE - Use as needed:

- Hard hat
- Faceshield
- Hearing protection

Level B

Level B protection is to be worn when work area organic vapor air contamination is greater than 5 ppm, and less than 50 ppm.

Required PPE:

- Steel-toe/steel-shank work boots with Saranex-coated inner overboots and latex outer overboots or steel-toe/steel-shank neoprene boots
- Polyethylene coated Tyvek coveralls
- Nitrile or neoprene outer gloves
- Vinyl inner gloves
- Positive pressure self-contained breathing apparatus (SCBA), or airline respirator

Optional PPE:

- Hard hat
- Faceshield
- Hearing protection

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AIR MONITORING EQUIPMENT (Available On Site)

- HNu portable photoionization organic vapor detector with an 11.7 eV lamp, calibrated with isobutylene standard. Calibration gas concentration should be between 50 and 150 ppm.

ACTION LEVELS

Readings upon which action levels are based are those taken in the worker's breathing zone; i.e., within a foot of the head of the worker closest to a source of contamination during normal activities. Readings to be considered should be persistent rather than instantaneous maximum values.

PID

Readings at or below background concentration - Level D

Readings greater than background concentration, but less than or equal to 5 ppm over background - Level C

Readings greater than 5 ppm over background concentration, but less than 50 ppm - Level B

Readings greater than 50 ppm - Depart from the immediate area.

Note: The PID does NOT detect methane gas.

CALIBRATION REQUIREMENTS

Calibrate all monitoring equipment at the beginning and end of each work day. When air monitoring is required, take area air samples at the following locations daily. Record time and results of monitoring:

- Upwind of work areas to establish background air contaminants.
- In support zone to check for contamination.

- Along decontamination line to check that decontamination workers are properly protected and on-site workers are not removing protective equipment in a contaminated area.
- Exclusion zone to verify level of protection and exclusion zone boundaries.
- Downwind of work area to track any contaminants leaving site.

FREQUENCY

Perform air monitoring whenever any of the following situations arise:

- Work begins at different portion of the site.
- New contaminants are noted.
- A new/different phase of work is started.
- Work is being performed in areas with obvious liquid contamination.
- Intrusive activities.

Conduct monitoring of the person collecting samples:

- If samples are being collected in jars, use monitoring equipment to determine the level of contaminants in the breathing zone of the person collecting samples.

In addition, personnel shall cease activities and move to a safe location if:

- The above meter malfunctions. Work may resume when meter is repaired or replaced.
- Odors or other signs of breakthrough, such as eye irritation, are experienced while wearing respirators.
- Any member of the field team experiences symptoms possibly related to chemical exposure, or temperature stress, such as dermatitis, dizziness, vomiting, etc.

Should conditions exist which cause the cessation of work, personnel should immediately leave the work area and perform decontamination in the nearest

practical location following safe and prudent practices. A prompt report by telephone must then be placed to the Health and Safety Coordinator, Project Manager or Corporate Health and Safety Manager to determine further appropriate actions. Any necessary medical attention, beyond first aid, which might be required will be sought utilizing the emergency facilities and numbers listed under "Emergency Reference Numbers" (Section 13) in this document.

SPECIFIC HAZARD EVALUATION

Electromagnetic/Magnetometer Survey

Level D

Air monitoring is not required

Soil Gas Survey

Level D Modified with upgrade to C

Air monitoring required

Shallow Soil Borings and Soil Sampling

Level D - Modified with upgrades to C or B

Air monitoring required

Surface Soil Sampling

Level D with upgrade to D - Modified

Air monitoring is not required

Monitoring Well Installation and Soil Sampling

Level D - Modified with upgrades to C or B

Air monitoring required

Well Development

Level D - Modified with upgrades to C or B

Air monitoring required

Borehole Geophysical Investigation

Level D - Modified

Air monitoring is not required

Inspection of Existing Monitoring Wells

Level D - Modified

Air monitoring is not required

Monitoring Well and Standpipe Abandonment

Level D - Modified

Air monitoring is not required

Groundwater Level Measurement

Level D - Modified

Air monitoring is not required

Hydraulic Conductivity Testing

Level D - Modified

Air monitoring is not required

Location and Elevation Survey

Level D

Air monitoring is not required

Groundwater Quality Characterization

Level D - Modified

Air monitoring is not required

Surface Water and Sediment Investigation

Level D

Air monitoring is not required

Ecological Assessment

Level D

Air monitoring is not required

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DECONTAMINATION PROCEDURES

EQUIPMENT

Decontamination of heavy equipment will be performed at a decontamination station whose location will be determined prior to the start of site activities. Heavy equipment decontamination will involve a high pressure water or steam-cleaning unit within a bermed area. Additional scrubbing may be required to remove encrusted materials. Decontamination of heavy equipment will occur prior to leaving contaminated areas of the site, if possible, as well as at the completion of such equipment's use on site. Rinse water generated will be directed into the aforementioned bermed area and will be collected for proper disposal. Contaminated solid and liquid investigative wastes will be contained for later disposal.

PERSONNEL

Disposable personal protective equipment will be removed at the decon station in the sequence described below, and will be decontaminated and placed in plastic bags for ordinary solid waste disposal. Any eating, drinking, or smoking during active operations is prohibited. Workers must wash their face and hands at the last station of the decontamination procedure.

Non-disposable items shall be removed, washed, and stored according to manufacturer's instructions and prudent practice, and in a sequence as outlined during training courses.

Decontamination procedures are based on each level of protection. See Appendix B for decontamination procedures.

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STANDARD OPERATING PROCEDURES

PERSONAL PRECAUTION

1. Project personnel will be required to read the Site Health and Safety Plan and sign a statement indicating that they have done so. These personnel are given the opportunity to have any questions regarding this plan answered at a pre-project safety meeting.
2. Eating, drinking, chewing gum or tobacco, application of cosmetics, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area of active remediation and at decontamination stations.
3. Contact with contaminated or suspected contaminated surfaces is to be avoided. Whenever possible, do not walk through puddles or discolored surfaces; kneel on ground; or lean, sit, or place equipment on visually stained surfaces.
4. No facial hair which interferes with a satisfactory fit of the mask-to-face seal of a respirator is allowed on personnel required to wear respiratory protection.

GENERAL WORK PRACTICES

1. Personnel on site must use the buddy system when working in Level C or B on this project.
2. Visual contact must be maintained between the workers. Team members must remain in proximity to each other for mutual assistance in any emergency.
3. Special emergency equipment (portable eyewash, fire extinguisher, first aid kits, etc.) will be available on site. These items must be located close to work activities.

4. Any self-contained breathing apparatus (SCBA) or airline respirators used as emergency backup equipment on site will be positive-pressure/pressure-demand.
5. Care will be taken so on site personnel do not suffer physical distress as a result of working under hot or cold weather conditions. This is discussed in full in Appendix A. Guidelines presented in this discussion will be generally followed. Individual physical differences and varying susceptibilities to heat/cold stress will be considered in scheduling work activities. Work schedules need to be adjusted to accommodate the most susceptible worker.
6. The SSO will monitor wind direction and try to orient work activities upwind of contaminant sources.

SPECIFIC WORK PRACTICES

Protection levels may be upgraded/downgraded if environmental monitoring or observed conditions indicate the need for any change in the level of protection due to changing Site conditions. Evaluations of level of protection may be made by the SSO or the the Health and Safety Coordinators.

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KEY PERSONNEL, RESPONSIBILITIES AND TRAINING

GENERAL

Training of on site personnel will conform with pertinent OSHA regulations including 29 CFR 1910.120. There will be a pre-project Safety Meeting, during which site personnel will be supplied with a copy of the Health and Safety Plan. The SSO will discuss the site, and workers will be instructed in the recognition, avoidance and prevention of unsafe activities and conditions. Emergency practices and procedures will be reviewed.

The SSO will have on site authority and responsibility to change levels of protection in accordance with the guidelines of this document. In addition, the SSO or HSC has authority to shutdown the operations should conditions warrant such action.

PERSONNEL ROLES

Health and Safety Manager (HSM)/Health and Safety Coordinator (HSC)

The HSM is responsible for maintaining proper medical surveillance (including pre-entry and exit examinations, if required), providing hazard communication information, training employees in safe operating procedures, and advising the Project Manager on any matters concerning the health and safety of employees or the public. The HSC may be required to perform various types of area or personnel monitoring for purposes of determining worker exposure and proper selection of personal protective equipment. The HSC should be consulted when any changes in the recommended procedures or levels of protective equipment are made.

Site Safety Officer (SSO)

The SSO is the on site Health and Safety Coordinator. It is the SSO's duty to remain on site during project activities, to maintain site security, and to monitor compliance with procedures related to health and safety, decontamination, protective equipment, etc.

EMPLOYEE EDUCATION AND TRAINING

Operational employees participate in routine health and safety education and training programs. These programs, directed by the HSM, are designed to provide employees with a thorough knowledge of hazardous materials and health and safety hazard potentials, and to comply with federal OSHA 29 CFR 1910.120(e): 40 hour initial off site instruction, 24 hour on site supervised work, 8 hour refresher training, supervisor's additional 8 hour specialized training, and U.S. EPA requirements. This training includes the following:

- General Safety Rules
- Basics of Chemistry
- Basics of Toxicology/Physiology
- Hazardous Materials (types/characteristics)
- Hazard Communication Information
- Respiratory Protection
- Respirator Training
- Chemical Protective Clothing
- Decontamination Procedures/Personal Hygiene
- Confined Space Work/Safety
- Atmospheric Testing/Sampling Procedures
- Emergency Response Procedures

HEALTH AND SAFETY PLAN TRAINING

This Site Health and Safety Plan is presented and discussed as necessary with the project personnel prior to the project work. This is accomplished at the pre-project site briefing conducted by the SSO.

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RESPIRATORY PROTECTION PROGRAM

OSHA requires employers to have in-place a written respiratory protection program (29 CFR 1910.134) which describes the company's standard operating procedures governing the selection and use of respirators.

PERMISSIBLE PRACTICE

Accepted engineering control measures, such as enclosure or confinement of the operation, general and local ventilation or substitution of less toxic materials, are to be used to control breathing air contamination whenever feasible. Breathing air contamination may include harmful dusts, fogs, fumes, mists, gases, vapors or sprays.

When engineering controls are not feasible, or during the time period they are being instituted, appropriate respirators are to be chosen and used in accordance with the guidelines set forth in this section of the Site Health and Safety Plan.

RESPONSIBILITIES RELATED TO RESPIRATORY PROTECTION EQUIPMENT

Warzyn is responsible for establishing and maintaining a respiratory protection program. Warzyn will provide to employees respirators which are applicable for the intended use when it has been determined that such equipment is necessary to protect the health of the employee.

Employees are responsible for using the provided respiratory protection in accordance with instructions given during their training programs.

RESPIRATOR SELECTION AND IDENTIFIED HAZARDS/POTENTIAL HAZARDS

Respirator selection is to be made in accordance with this section of the Site Health and Safety Plan and the manufacturer's guidelines and the American National Standards Institute (ANSI) Practices for Respiratory Protection Z88.2-1969.

RESPIRATOR LIMITATIONS

Air-Purifying Respirators

In order to use an air-purifying respirator, the following conditions must be met:

- Oxygen level must be between 19.5% and 23.5%.
- Atmospheric contaminants must have good warning properties:
 - Can be recognized by taste or smell
 - Odor/taste threshold must be well below permissible exposure limit (PEL) and threshold limit value (TLV)
- Contaminant is not shock-sensitive or water-reactive.
- A chemical cartridge must be available and approved for use with the known contaminants.
- Air contaminant level does not exceed the maximum use concentration (MUC) set by the cartridge manufacturer. While the MUC is specific for each cartridge and is dependent on the type and amount of absorbant, the following MUCs are generally true:
 - 1,000 PPM for organic vapor cartridges
 - 20,000 PPM for organic vapor canisters
 - 50 PPM for hydrogen chloride (acid gas) cartridge
 - 50 PPM for sulfur dioxide (acid gas) cartridge
 - 10 PPM for chlorine (acid gas) cartridge

A partial list of gaseous materials for which air-purifying (chemical cartridge) respirators should NOT be used for respiratory protection regardless of concentrations or time of exposures follows. Should concentrations of any of these contaminants be expected to exceed one-half of the TLV, use of an air-supplied respirator would generally be indicated.

Acrolein	Hydrogen selenide	Nitroglycerin
Aniline	Hydrogen sulfide	Nitromethane
Arsine	Methanol	Ozone
Bromine	Methyl bromide	Phosgene
Carbon monoxide	Methyl chloride	Phosphine
Di-isocyanates	Methylene chloride	Phosphorous trichloride
Dimethyl aniline	Nickel carbonyl	Stibine
Dimethyl sulfate	Nitro compounds:	Sulfur chloride

Hydrogen cyanide
Hydrogen fluoride

-Nitrobenzene
-Nitrogen oxides

Vinyl chloride

Chemical cartridges are to be changed at least at the end of each work shift in addition to whenever breathing becomes difficult or breakthrough (i.e., you can taste or smell the contaminant) occurs.

The primary means of identifying chemical cartridges is the wording of the labels. The secondary means of identification is color coding. The following color coding is used:

- Acid gases: white
- Hydrocyanic acid gas: white with 1/2-inch green stripe completely around the cartridge near the bottom
- Chlorine gas: white with 1/2-inch yellow stripe completely around the cartridge near the bottom
- Organic vapors: black
- Ammonia gas: green
- Carbon dioxide: blue
- Acid gases and organic vapors: yellow
- Hydrocyanic acid gas and chloropicrin vapor: yellow with 1/2-inch blue stripe completely around the cartridge near the bottom
- Acid gases, organic vapors and ammonia vapors: brown
- Radioactive materials, except tritium and noble gases: purple (magenta)
- Particulates (dust, fumes, mists, fogs or smokes) in combination with any of the above gases or vapors: cartridge color for the contaminant as designated above with 1/2-inch gray stripe completely around the cartridge near the top
- All of the above atmospheric contaminants: red with 1/2-inch gray stripe completely around the cartridge near the top

Air-Supplied Respirators

Air-line respirators and self-contained breathing apparatus (SCBA) are two types of air-supplied respirators (ASR). The breathing air is supplied from either a compressor or a compressed gas cylinder. Refer to the section on supplied air quality, found later in this section, for specifications.

Such units are to be operated in the pressure-demand/positive-pressure mode which maintains a slight positive pressure within the facepiece even if a facepiece leak occurs. This prevents contaminants from entering the facepiece.

If an air-line respirator is used in an atmosphere where the level of contaminants is immediately dangerous to life or health (IDLH), an escape bottle with at least a 5-minute air supply is to be used with it. A SCBA is to have an alarm that sounds when there is a 5-minute supply of air remaining in the tank.

RESPIRATORY PROTECTION TRAINING

Respiratory protection will be part of the annual 8-hour refresher training given to the field staff.

Employees are not allowed to wear respiratory protection prior to receiving training in respirator use, selection and maintenance. Such training will include:

- Handling of the various types of respirators to be used
- How a respirator is to be worn
- How to adjust a respirator
- How to determine if a respirator fits properly
- Fit testing (i.e., testing the respirator's face-to-facepiece seal)
- Wearing the respirator in normal air for a period sufficient to become familiar with the equipment
- Wearing the respirator in a test atmosphere

RESPIRATOR STORAGE

Respirators, when not in use, are to be stored in a clean, dry location, out of direct sunlight. They are to be stored in such a manner that the facepiece, seal, and exhalation valves are not distorted during storage, and objects are not placed on top of the respirator.

RESPIRATOR INSPECTION, CLEANING AND MAINTENANCE

Inspection

The following inspection points are to be checked prior to donning the respirator and after each use. Under no circumstances should a respirator which fails this inspection be worn, it is to be repaired or replaced.

- Check to see that the headbands still have their elasticity. Inspect for cracks or tears and check that buckles are in place and working properly.
- Check the facepiece for dirt, cracks, tears, or holes. Inspect the shape of the facepiece for distortion that can occur from improper storage and check that the face seal is flexible, not stiff.
- Check the inhalation and exhalation valves for cracks, tears, distortions, dirt, build-up of material between the valve and valve seat and signs of deterioration or degradation.
- For APRs, check the cartridge holders to check the gaskets are in place. Check the threads for damage and cracks.
- For APRs, be sure the cartridges and filters are clean. Never try to clean a cartridge or filter by washing it or using compressed air. Inspect the cartridge for dents, scratches or other damage that may affect the seal.
- For ASRs, check the backpack and harness assemblies for damage, worn parts and proper function. Check the air line and fittings for signs of damage and proper seal.
- For SCBAs, check the cylinder and cylinder valve assembly, regulator, low-air alarm and high-pressure valve for damage, and proper function. Check the breathing tube for cracks, signs of damage, and good seals.

Respirators that are not routinely used are to be inspected each month to check that they are in good working condition. Those employees to whom a Warzyn respirator has been assigned or who have their own respirator are responsible for completing the monthly inspection in accordance with Warzyn guidelines. The office Health and Safety Coordinators are responsible for seeing that Warzyn pool respirators are inspected monthly in accordance with Warzyn guidelines. Employees with assigned or personal respirators are to provide results of their inspections to the office Health and Safety Coordinator after each monthly inspection.

SCBAs are to be inspected monthly. Air cylinders are to be kept fully charged. Regulator and low-air alarms are to be checked for proper operation.

Records of inspection dates and findings are to be kept by the office Health and Safety Coordinator or designated alternate.

Cleaning

Contaminated respirators are to be cleaned according to routine decontamination procedures, then regular cleaning is to be completed.

- Break down respirator into its component parts.
- For APRs, discard expended filters and cartridges.
- Discard head straps and valves if they are too contaminated to be cleaned, no longer functional or damaged.
- Wash remaining parts in warm water and mild detergent. Scrub parts with a soft brush.
- Rinse remaining parts in clean, warm (120°F) water.
- Let respirator and its parts air-dry in a clean area.
- Inspect parts and replace, if needed. Re-assemble respirator.
- Wipe the entire respirator with antiseptic solution or wipes.
- For APRs, replace used and expended cartridges with the proper new cartridges.
- Place respirator in plastic bag, seal, and store in designated area.

Maintenance

Respirators are to be kept in good condition to function properly. When any part shows evidence of excessive wear or failure, it is to be replaced immediately with the proper part from the manufacturer. Parts from different makes and models of respirators are not interchangeable.

MONITORING PROGRAM EFFECTIVENESS

Each employee who has been assigned a respirator is to have that respirator inspected at the annual health and safety training. Site health and safety audits are to include checking for the proper use of respiratory protection.

MEDICAL STATUS DETERMINATION AND REVIEW

No employee is to be assigned tasks requiring the use of respirators, unless it has been determined that the employee is physically able to perform the work and use the equipment. The determination of an employee's ability to wear a respirator is part of the baseline, annual, and exit medical examination protocols.

APPROVED/ACCEPTED RESPIRATORS

Only those respirators approved by the Mine Safety and Health Authority (MSHA) or the National Institute of Occupational Safety and Health (NIOSH) are to be issued to and used by Warzyn employees.

SUPPLIED AIR QUALITY

When conditions require the use of ASRs, the minimum quality level which can be used is Grade D breathing air. The specifications for Grade D breathing air are described in Compressed Gas Association Commodity Specification G-7.1-1966 and are summarized below:

- Hydrocarbons, as methane, ≤ 5 PPM
- Carbon monoxide ≤ 20 PPM
- Carbon dioxide $\leq 1,000$ PPM
- No odor
- Oxygen level = 20.9% if recompressed air, 19.5% to 23.5% if reconstituted air

Compressed oxygen, liquid air or liquid oxygen are not to be used.

Breathing air may be supplied to respirators by compressed gas cylinders or air compressors.

Compressors that are used to supply breathing air are to be equipped with necessary safety and standby devices. Only breathing air-type compressors are to be used. Compressors are to be constructed and located so as to avoid the entry of contaminated air into the system (e.g., do not place compressor near operating equipment with combustion engines). Suitable in-line air purifying absorbant

beds and filters are to be installed to further enhance breathing air quality. Alarms to indicate compressor failure or over-heating are to be installed.

A compressor is to be used in conjunction with a secondary air receiver, such as an escape cylinder worn by the individual, of sufficient capacity to allow the wearer to escape from the contaminated atmosphere in the event of compressor failure.

If an oil-lubricated compressor is used, it is to have a high-temperature alarm and a carbon monoxide alarm.

Couplings specific for air lines are to be used. Such couplings are to be incompatible with outlets for other gas systems to prevent unintentional connection to nonrespirable gases or oxygen.

USE OF RESPIRATORS

Leave the area, follow decontamination procedures and contact the Site Safety Officer if any of the following occur:

- Respirator becomes dislodged.
- An odor, taste or respiratory or throat irritation occurs.
- Air from respirator gets very warm.

When using self-contained breathing apparatus (SCBA) or when there is the possibility of an oxygen-deficient (<19.5%) atmosphere or toxic contaminants of a level that are immediately dangerous to life or health (IDLH), in addition to the employees performing the task, there is to be an attendant. This attendant is to maintain communications - visual, audio or signal line - with employees working in the exclusion zone. The attendant is to remain outside the exclusion zone, in an area where it is unlikely that the attendant will be affected by an incident in the exclusion zone. The attendant is to have immediately available the necessary rescue equipment to assist the other employee in case of an emergency. Such rescue equipment is not limited to respiratory protection, but may include such items as safety lines, harnesses, hoists, and radio communications.

Employees wearing ASRs are to also wear safety harnesses and safety lines to aid in lifting or removing them from hazardous atmospheres.

An employee is not to be allowed to wear a respirator if any conditions exist which prevent a good face seal. Such conditions include beard, sideburns or other facial hair that projects under the facepiece and temple pieces on glasses. The absence of one or both dentures may also adversely affect the facepiece seal.

Each employee who might be expected to wear a respirator in the course of performing assigned work tasks is to be qualitatively fit tested at least annually using at least two different test atmospheres. Generally isoamyl acetate (banana oil) and irritant smoke are used. Employees are to check the fit of their facepiece, using the positive and negative pressure tests, each time they don the respirator and also prior to entering a contaminated atmosphere.

Those employees wearing corrective lenses are to not wear any style which interferes with the face-to-facepiece seal of the respirator. Examples of appropriate corrective lenses to wear with respirators include glasses with the side-temple pieces removed and optical inserts specifically made for the respirator. Should an employee require optical inserts, such inserts will be supplied by Warzyn.

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MEDICAL SURVEILLANCE PROGRAM

Employees involved with this project work will participate in a medical surveillance program under the direction of an Occupational Physician. This program includes baseline, annual or bi-annual, and exit examinations. The typical annual or bi-annual physical examination protocol includes:

- Comprehensive Health and Exposure History
- Physical Evaluation
- Urinalysis
- Stool Occult Blood
- Blood Chemistry Profile
- Hematology Profile
- Pulmonary Function Testing
- Audiometry
- Vision Testing

In addition, if there is evidence of exceptional occupational exposure, optional medical testing for heavy metals, RCB cholinesterase, serum PCB level, and reticulocyte count are performed with approval of the Health and Safety Manager. Personnel are informed of the results of their medical surveillance exams and are informed of their right to access their medical records.

Additionally, each employee is evaluated to determine if they are physically able to perform work while using respiratory protective equipment in compliance with 29 CFR Part 1910 and ANSI Z88.2 - 1980.

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SITE CONTROL AND SECURITY

Work zones in and around the site will be defined by the SSO prior to the initiation of site activities. If deemed necessary, the overall work site will be delineated into exclusion, decontamination, and support zones. The areas of active work plus a buffer zone will comprise the Exclusion Zones during operations at the site. The size of this buffer zone is to be determined in the field by the SSO. The Decontamination Zone has been identified as previously cited in this plan. Each zone will be clearly defined with physical demarcation devices in accordance with prudent practices and applicable guidelines. Only personnel actively involved in project work will enter these areas during project operations. See map 15268-7 for the location of site activities.

EXCLUSION ZONE

The Exclusion Zone defines the area where contamination is known to exist or potentially exists. Personnel entering the Exclusion Zone must wear prescribed Levels of Protection. An entry and exit check point will be established at the periphery of the Exclusion Zone to regulate the flow of personnel and equipment in and out of the zone, and to verify that entry and exit procedures are followed.

The outer boundary of the Exclusion Zone may need to be delineated (at least in part) by a "hotline", consisting of survey stakes and flagging. This will delineate specifically identified "high hazard" areas such as spill areas, hazardous work areas (e.g., drilling locations), etc. Factors which will be considered in positioning the "hotline" include the distances needed to prevent fire or an explosion from affecting personnel outside the zone, the physical area necessary to conduct site operations, and the potential for airborne dispersal of contaminants from the area. The "hotline" may be modified and adjusted during operations, as more information becomes available.

Based on current information, a site-wide Exclusion Zone is not warranted, and thus will not be established at the site. Exclusion Zones will be established at any identified "high hazard" areas. Otherwise, Exclusion Zones will generally be restricted to drilling operations encompassing an approximate twenty-meter radius outward from these areas, whenever location permits.

DECONTAMINATION ZONE

The Decontamination Zone includes the area immediately surrounding the Exclusion Zone. This zone lies at the interface of the Exclusion Zone and the Support Zone, and provides for the decontamination of equipment and personnel before crossing into the Support Zone. Contaminated protective equipment, such as respirators, hoses, boots, etc., shall not be removed from the Decontamination Zone. The Decontamination Zone serves as a buffer to further reduce the probability of the clean area (Support Zone) becoming contaminated or being affected by other existing hazards.

SUPPORT ZONE

The Support Zone covers all areas which lie both outside of the Decontamination Zone and within the site boundary. This area is considered to have no significant air, water, or soil contamination, and therefore presents no potential hazard to on site personnel. The Support Zone provides an area for the performance of on site, non-hazardous activities and acts as a staging area for personnel entering the Decontamination and Exclusion Zones.

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CONTINGENCY PLAN

Copies of the following will be kept in the field operations vehicle.

EMERGENCY ACTION - STANDARD OPERATION PROCEDURES

- Name, address, and telephone number of the nearest medical treatment facility will be conspicuously posted. A map and directions for locating the medical facility will be readily available.
- Telephone numbers and procedures for obtaining ambulance, emergency, fire, and police services will be conspicuously posted.
- An emergency eye wash fountain and first aid equipment shall be readily available on site.
- The SSO will inform the local medical facility before site operations commence. The SSO will give the medical facility general information of on site chemical hazards that may be encountered, as well as site location and time and dates of work activities.
- The SSO will notify the local fire department of possible site contaminants and site operations.
- Every attempt to rapidly identify substances to which the worker has been exposed shall be made. This information will be given to medical personnel in the event of an emergency.
- Procedures for decontamination of injured workers and preventing contamination of medical personnel, equipment, and facilities shall be communicated to workers.

MEDICAL EMERGENCIES

Any person who becomes ill or injured in the exclusion zone must be decontaminated as soon as possible, giving consideration to which risk will be greater, the spread of contamination or any potential health effects of the individual. If the person is stable, decontamination should be completed and first

aid administered as needed prior to transport. If the person's condition is unstable, gross decontamination is to be completed, if necessary (i.e., removal of PPE) prior to administering first aid, to prevent injury to responder. The SSO will be trained in first aid and CPR. First aid is to be administered while awaiting an ambulance or paramedics, as appropriate to the injury. Refer to the Emergency Decontamination procedure, found in Appendix B for details.

Anyone being transported to a clinic or hospital for treatment should have available to them information on any potential chemical(s) to which they could have been exposed to at the site, along with their medical history. Any vehicle used to transport contaminated personnel, should be tested and cleaned as necessary.

GENERAL ON SITE FIRST AID

The following discusses general on site First Aid procedures for exposure to contaminants on site:

- Contaminant Material in Eyes - Wash with copious amount of water for at least 15 minutes. Lift upper and lower lids occasionally. Seek medical attention immediately (eye wash will be available on site).
- Contaminated Materials Contact Skin - Promptly wash the area with soap or mild detergent and water for organics; just use water, do not rub, for corrosives. Flush well with water for at least 15 minutes. Check for signs of skin irritation. Seek medical attention if unusual appearance of skin or sensation is noted.
- Contaminant Materials Penetrate Protective Clothing - Discard protective clothing and underlying clothing. Wash skin as described above. Confer with SSO in selection of new protective clothing.
- Inhalation of Contaminated Air - Move person to a well ventilated area at once. If the individual is not noticeably affected and has no side effects after about 15 minutes, returning to work is allowed, provided the work area is no longer contaminated. If the individual has not fully recovered, continue to monitor for 15 to 20 additional minutes and seek medical attention, if necessary. Use artificial respiration, if breathing has stopped. In such instances, seek medical attention after the victim has resumed breathing. If possible, have someone seek medical attention while the person is being resuscitated.

- Ingestion of Contaminated Materials - If conscious, flush the mouth with water, being careful not to swallow. Contact the local poison center (see telephone number in Emergency Response and Information section). When called for, induce vomiting by physical means or syrup of ipecac (**DO NOT** induce vomiting in unconscious persons). Seek medical attention promptly.

If at any time, a worker feels fatigued, dizzy, nauseous, or experiences headaches, the worker is to be moved to a well-ventilated area and allowed to rest for 15 to 30 minutes. If symptoms do not subside, seek medical attention.

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EMERGENCY RESPONSE AND INFORMATION

ON SITE COMMUNICATION SYSTEM

On site communication procedures will be established in the field during the initial site briefing or whenever there is a change of site personnel. Emergency signals will be designated and discussed during this initial briefing. Employees will be made aware of routes of egress and assembly points to be used in the event of an emergency. A telephone will be accessible to site personnel during project field activities defined under the scope of work. In addition, vehicle horns or other means will be used to notify personnel of on site emergency situations. Communication in the event of a site emergency will be determined by the SSO. Personnel will leave the site by the most expeditious route and will assemble at a location designated by the SSO in the initial site health and safety briefing.

WORK SITE EMERGENCY PROCEDURES

In the event of a medical emergency at a work site, personnel will act quickly and reasonably to remedy the situation. The SSO shall give directions as to how to proceed. If the SSO is incapacitated by an injury, or is otherwise unable to respond, an appropriate local emergency response agency will be contacted.

Special care will be taken if rescue efforts are necessary. Personnel shall utilize extreme caution and take steps to be as adequately protected as possible, before attempting such rescue.

EMERGENCY EQUIPMENT

The following emergency equipment shall be maintained at the contamination reduction zone or in the operations vehicle:

- Fire Extinguisher
- Portable Eyewash

- First Aid Kit - Approved by a consulting physician and meeting the requirements of 29 CFR 1926.50.
- 5 Gallons of Fresh Water (for flushing of skin, general washing)

Resources

<u>Services Organization</u>	<u>Location</u>	<u>Phone Number</u>
Hospital: Beloit Memorial	1969 West Hart Road	608-364-5011
Clinic: Blackhawk Clinic	1701 Blackhawk Boulevard	815-389-2268
Fire Department	Rockton	815-624-4341
Poison Control Center	Madison	608-262-3702
Police	Rockton	815-624-4351
Rescue/Ambulance	Rockton	815-624-4341
CHEMTREC		800-424-9300
Warzyn		
H&S Manager - Mary Ann Latko	Warzyn	708-691-5071 (Home) 708-858-7610
H&S Coordinator - Erik A. Goplin	Warzyn	608-231-4747 (Home) 608-437-4879
Project Manager - Kevin Domack	Warzyn	608-231-4747
Site Safety Officer - James E. Moser	Warzyn	608-231-4747

Hospital Route

Drawing 15268-B1, which can be found at the end of this section, shows the route from the site to Beloit Memorial Hospital. From the site, proceed to Blackhawk Boulevard and turn left (north)(Blackhawk Clinic is directly across from the site on Blackhawk Boulevard and can be used for routine medical attention). At the intersection of Blackhawk Boulevard and Pleasant Street turn onto Pleasant Street and proceed north. Pleasant Street becomes U.S. 51. At the intersection of U.S. 51 and Elmwood Avenue, turn right on Elmwood and proceed to Prairie Avenue. Turn left on Prairie Avenue and proceed two blocks. Beloit Memorial Hospital is on the right at 1969 West Hart Road.

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The supervisors of all sub-contractors working under this SSP are to sign below, indicating that they have read this SSP, understand its contents, have been given opportunity to discuss its contents with the SSO and agree to abide by its requirements and enforce compliance with the SSP among their work crews.

[illegible]

Beloit Corporation-Rockton Facility



Appendix A

Health and Safety Standard Operation Procedure Temperature Stress

**HEALTH AND SAFETY
STANDARD OPERATION PROCEDURE**

Temperature Stress

**Control Measures, Signs and Symptoms,
and First Aid for Cold and Heat Stress**

January 1991

COLD STRESS

COLD STRESS REDUCTION

The following engineering controls are recommended for reduction of cold stress:

- Use general or spot heating to increase temperature at work site if this does not create a hazardous situation.
- Shield work area from wind.
- Cover metal handles of tools and equipment with thermal insulating materials.
- Do not sit on unprotected metal chair seats.
- Use heated rest areas if work is to be performed in an equivalent chill temperature of 20°F or below.

The following work practice controls are recommended to reduce cold stress:

- Develop and adhere to a work-rest schedule, using the guidelines at the end of this section.
- Drink warm, caffeine-free, sweet, non-alcoholic drinks or soup frequently.
- Schedule work for warmest part of the day.
- Use heated rest areas regularly.
- Use the buddy system. Do not work alone. Observe your co-workers for signs and symptoms of cold stress.
- Allow and encourage workers to pace themselves and take extra breaks when needed. The work schedule should be set by the person most susceptible to cold stress. Do not pressure someone to work beyond their capabilities.
- Whenever possible, allow new workers time to adjust to working in a cold environment before working full time. Ideally, acclimation should occur over five days: 20% Day 1 with a 20% increase on each successive day.
- When possible, arrange the work to minimize standing or sitting still for long periods of time.
- Reorganize work procedures so as much of a job as possible can be done in a warm environment.

- Avoid overtime.
- Remove outer layer of clothing when entering warm shelter.
- If clothes are wet, change to dry work clothes before returning to work in cold. If not possible, loosen clothing to facilitate evaporation of sweat.

SIGNS AND SYMPTOMS OF COLD STRESS

Send a worker to warm shelter immediately if any of the following symptoms are noted:

- Heavy shivering.
- Frostnip (skin turns white).
- Feeling of excessive fatigue.
- Drowsiness.
- Euphoria.

FIRST AID

Take victim to a warm area. Remove the outer layers of clothing. Gently warm the affected area, submerge it in tepid water if possible but do not rub. If there is evidence of frostbite, obtain medical attention immediately.

TABLE 1

COLD STRESS WORK/WARM-UP SCHEDULE

Air Temperature with Sunny Sky (degrees F)	Work/Break Schedule (minutes)				
	no wind	5 MPH wind	10 MPH wind	15 MPH wind	20 MPH wind
-05 to -09	110/10	110/10	75/10	55/10	40/10
-10 to -14	110/10	75/10	55/10	40/10	30/10
-15 to -19	75/10	55/10	40/10	30/10	cease
-20 to -24	55/10	40/10	30/10	cease	cease
-25 to -29	40/10	30/10	cease	cease	cease
-30 to -34	30/10	cease	cease	cease	cease
-35 & below	cease	cease	cease	cease	cease

NOTE These recommendations and guidelines are adapted from Threshold Limit Values and Biological Exposure Indices for 1990-1991, published by the American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

NOTE 05 MPH wind - light flag moves, 10 MPH wind - light flag fully extended, 15 MPH wind - raises newspaper sheet, 20 MPH wind - blowing and drifting snow

Table 1 addresses the health hazards related to cold weather work. The practicality of working under a work-rest schedule, together with the ability of the necessary equipment to function properly in cold weather, may be more restrictive than the health hazards and also need to be considered.

Cold stress schedule applies to light or sedentary work activities. Light to moderate work activities can be moved down one level, moderate to heavy work activities can be moved down two levels if workers are acclimated, have proper protective clothing and show no signs of cold stress.

TABLE 2

ACTIVITY/METABOLISM RATE ESTIMATES

<u>Work Classification</u>	<u>Activity</u>	<u>Metabolic Rate (kCal/HR)</u>
light	typing	113 to 140
	driving car	140 to 160
moderate	walking with lifting/pulling	250 to 350
heavy	pick/shovel work	380 to 500

HEAT STRESS

HEAT STRESS REDUCTION

While site specific conditions need to be considered, the following guidelines are recommended to prevent or reduce the effects of heat stress.

- Develop and adhere to a work-rest schedule using the guidelines at the end of this section.
- Take breaks in cool areas.
- Drink fluids hourly. The fluids should be caffeine-free and non-alcoholic. Do not wait until you are thirsty. Your normal thirst mechanism is not sufficient to overcome the effects of dehydration. If you feel thirsty, you are already becoming dehydrated.
- Schedule work for the cooler part of the day -- early morning and/or early evening.
- Allow and encourage workers to pace themselves and take extra breaks when needed. The work schedule should be set by the person most susceptible to heat stress. Do not pressure someone to work beyond their capabilities.
- Whenever possible, allow new workers time to adjust to working in a hot environment before working full time. Ideally, acclimation should occur over five days: 20% Day 1 with a 20% increase on each successive day.
- Avoid overtime.
- Use the buddy system. Never work alone and watch your co-workers for signs of heat stress.

PERSONAL MONITORING

At each work break, count your pulse during a 30 second period as early as possible in the rest period.

- If your heart rates exceeds 110 beats per minute (BPM) at beginning of rest period, shorten your next work cycle by 1/3 and keep the rest period the same.
- If your heart rate still exceeds 110 BPM at next rest period, shorten the following work cycle by 1/3.

At the beginning and end of each work shift, measure your weight, \pm 0.25 LB, wearing similar clothes. You should not loss more than 1.5 % of your total body weight in a work day. If you do, drink fluids to compensate and to prevent dehydration.

SIGNS AND SYMPTOMS OF HEAT STRESS

Heat rash

Heat cramps

- Muscle spasms
- Pain in hands, feet or abdomen

Heat exhaustion

- Pale, cool moist skin
- Heavy sweating
- Dizziness
- Nausea
- Fainting

Heat stroke

- Red, hot, usually dry skin
- Lack of, or reduced, perspiration
- Nausea
- Dizziness, confusion
- Strong, rapid pulse
- Coma

FIRST AID

Remove the affected individual's protective clothing and equipment. Douse the victim with water. Wrap the victim in wet towels or clothing. If there are signs or symptoms of heat exhaustion or heat stroke, get medical attention immediately.

TABLE 3

HEAT STRESS MONITORING SCHEDULE (MINUTES)

<u>Adjusted Temperature*</u> <u>(degrees F)</u>	<u>Normal Work</u> <u>Clothes</u>	<u>Impermeable Work</u> <u>Clothes</u>
above 90	45	15
88 to 90	60	30
83 to 87	90	60
77 to 82	120	90
72 to 78	150	120

*: Adjusted temperature = measured temperature + (13 x % sunshine)

NOTE These recommendations and guidelines are adapted from
Threshold Limit Values and Biological Exposure Indices for 1990-
1991, published by the American Conference of Governmental
Industrial Hygienists, Cincinnati, OH.

Table 3 applies to moderate work levels. For heavy work levels, apply monitoring schedule one level lower. Light to sedentary work activities can be moved up one level if workers are acclimated and show no signs of heat stress.

TABLE 4

ACTIVITY/METABOLISM RATE ESTIMATES

<u>Work</u> <u>Classification</u>	<u>Activity</u>	<u>Metabolic Rate</u> <u>(kcal/hr)</u>
light	typing	113 - 140
	driving car	140 - 160
moderate	walking with lifting/pulling	250 - 350
heavy	pick/shovel work	380 - 500

Appendix B

**Health and Safety Standard Operation Procedure
Decontamination**

**HEALTH AND SAFETY
STANDARD OPERATION PROCEDURE**

Decontamination

**Guidelines for Decontaminating Persons and Equipment
in an Emergency and Under Routine Operating Conditions**

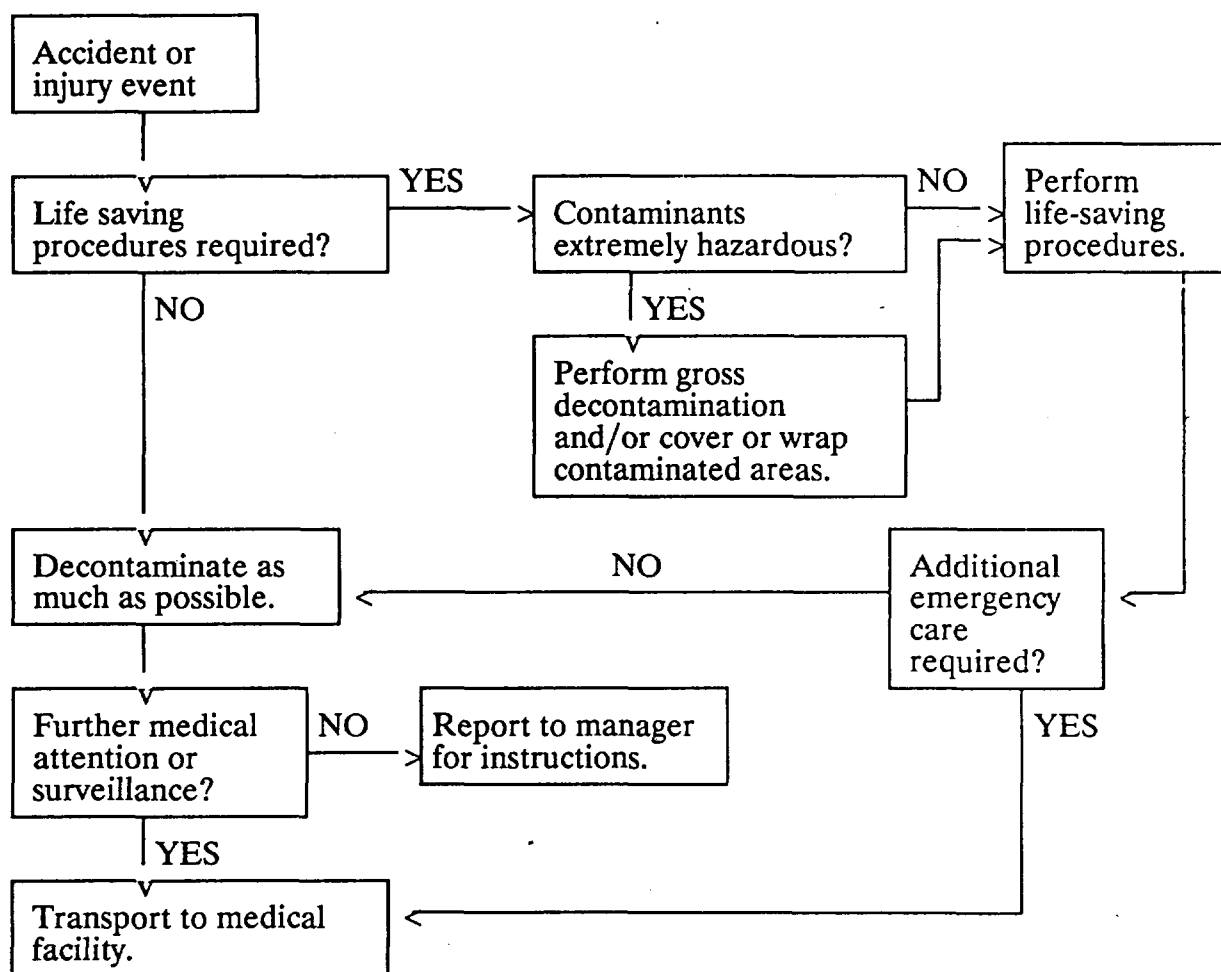
January 1991

EMERGENCY DECONTAMINATION

The need for emergency decontamination of an individual may arise as the result of:

- Injury or illness
- Overexposure to chemicals or hazardous substances
- Temperature stress

Primary consideration needs to be given to life-preservation actions and the minimization of additional harm or health risks to the individual in the emergency situation and the rescuing individuals.



LEVEL B

ROUTINE DECONTAMINATION

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

OUTER GARMENT REMOVAL

If using self-contained breathing apparatus (SCBA), remove SCBA back pack and remain on air as long as possible. Remove chemical-protective outer garments and deposit in the appropriate container.

RESPIRATORY PROTECTION REMOVAL

Remove hard hat and face piece, and deposit on a clean surface. Wash and rinse hard hat and face piece. Wipe off and store face piece in a clean, dry location.

INNER GLOVE REMOVAL

Remove inner gloves and deposit in the appropriate container for disposal.

FIELD WASH

Thoroughly wash hands and face with soap and water. Shower as soon as possible.

LEVEL B
DECONTAMINATION FOR AIR TANK EXCHANGE

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves with decontamination solution then rinse using water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves not disposable, store them in a clean, dry place.

TANK CHANGE

Exchange air tank. Don new outer boots/gloves. Tape joints and return to exclusion zone.

LEVEL C

ROUTINE DECONTAMINATION

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves and/or splash suit with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

OUTER GARMENT REMOVAL

Remove chemical-protective outer garments and deposit them in the appropriate container.

RESPIRATORY PROTECTION REMOVAL

Remove hard hat and respirator and deposit them on a clean surface. Discard respirator cartridges in the appropriate container. Wash and rinse hard hat and respirator. Wipe off and store respirator in a clean, dry location.

INNER GLOVE REMOVAL

Remove inner gloves and deposit them in the appropriate container for disposal.

FIELD WASH

Thoroughly wash hands and face with soap and water. Shower as soon as possible.

LEVEL C

DECONTAMINATION FOR RESPIRATOR-CARTRIDGE EXCHANGE

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves and/or splash suit with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit in them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

RESPIRATOR CARTRIDGE CHANGE

Exchange respirator cartridges. Don new outer boots/gloves. Tape joints and return to exclusion zone.

LEVEL D-MODIFIED

ROUTINE DECONTAMINATION

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

(Optional, include if necessary for gross decontamination)

Scrub outer boots/gloves and/or splash suit with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

OUTER GARMENT REMOVAL

Remove chemical protective outer garments and deposit them in an appropriate container. Remove hard hat and safety glasses. Decontaminate them as necessary and deposit on a clean surface.

INNER GLOVE REMOVAL

Remove inner gloves and deposit them in the appropriate container for disposal.

FIELD WASH

Thoroughly wash hands and face with soap and water. Shower as soon as possible.